



**INTERDISCIPLINARY CENTRE FOR WATER RESEARCH**  
**Indian Institute of Science**  
**BENGALURU**

**PRAVEEN C. RAMAMURTHY**  
**Professor & Chair**

**Inquiry Number: ICWaR/PCR/**

**Dated: 25/01/2024**

**Domestic Tender**

**Request for Quote for the procurement of DC-powered Electrochemical system with Multi-Channel,  
Indian Institute of Science, Bengaluru  
(Last Date: 16<sup>th</sup> February 2024)**

This is an RFQ (Request for Quote) for setting up a DC-powered Electrochemical system with Multi-Channel for testing real-time samples at IISc, Bengaluru. The RFQ covers two items, which are listed below. The purchase for each of the systems will be processed independently (as a separate PO). So, vendors are NOT required to quote for items. Vendors are encouraged to quote for just one or a subset of the items. To help fair comparison, vendors are required to quote the prices separately for each item.

We are seeking a quote for a DC-powered Electrochemical system with Multi-Plexer.

**Procedure & Other conditions:**

1. The decision of the purchase committee will be final.
2. Any questions can be directed to the undersigned at [praveen@iisc.ac.in](mailto:praveen@iisc.ac.in).
3. The quotation should be addressed to: The Chair, Attention: Prof. Praveen C Ramamurthy, Interdisciplinary Centre for Water Research, Indian Institute of Science, Bengaluru – 560 012.
4. The deadline for submission of hardcopy of the quotes is **10 00 hours (IST) on 16<sup>th</sup> February 2024**. The quotes should be addressed to the undersigned at the address given below.
5. Vendors will be required to submit a technical proposal and a commercial proposal in two separate sealed envelopes. Only vendors who meet the technical requirements will be considered for the commercial negotiation.
6. The technical proposal should contain a compliance table with four (4) columns. The compliance table should list all the items in the requirements section given below in the same order. The first column should describe your compliance in a “Yes” or “No” response. If “No,” the second column should state the extent of the deviation. The “third” column should state the reasons for the deviation, if any. The fourth column can be used to compare your tool with that of your competitors or provide details as requested in the technical requirements table below. Any other feature that you would like to bring to the attention of the purchase committee can be listed at the end of the compliance table.
7. The technical specifications given below are “highly desired”. However, the committee reserves the right to lower technical specifications to obtain a more competitive price.
8. The commercial proposal should have the price of the item. All the accessories needed for the tool to function as per the technical specification must be listed. Please provide itemized quotes for the tool and any other attachments/software.
9. The validity period of the quotation should be at least 90 days.
10. Necessary training to operate the procured setup and required literature support should be provided without additional cost.
11. Your quotation should clearly indicate the terms of delivery, delivery schedule, entry tax, and payment terms.

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12. Final installment will be made only after satisfactory installation and demonstration of critical capabilities.
13. Vendors should undertake to support the system with spares and software bugfixes, if any, for at least next 5 years or more.
14. Please indicate the warranty provided with the tool. Warranty of at least 3 years or more is preferred. No travel claims must be made by vendor for servicing during the warranty/guarantee period.
15. Provide itemized cost for required spares for 2 years of operation. For sake of this calculation, the vendor may assume active tool usage of 10 hours/ week. This number will be used to estimate the life cycle cost of the tool.
16. The vendor should be able to repair and maintain the equipment, once it is installed in India. Clarify if periodic (preventive) maintenance can be done by a trained on-site engineer (i.e. IISc employee) or requires a specialist from the OEM.
17. If the maintenance can be done by training a IISc employee, please specify the cost of this training, as an additional option.
18. If maintenance must be done by OEM, as an additional option, provide cost of an annual maintenance contract (AMC) for 3 years, post warranty. The AMC must cover 1 scheduled and 1 emergency visit per year. It must also indicate who will service the AMC, an Indian agent or the OEM. The AMC cost must also include an itemized list of spares that are essential for the scheduled visits.
19. The vendor should have a good track record of delivering such equipment to universities/research institutions in India and high rank institutions worldwide. The RFQ must include references of 3 previous installations in the last 5 years, preferable in India. Please provide the names and contact addresses of the referees, so that the committee can contact them independently.
20. Vendors are encouraged to highlight the advantages of their tools over comparable tools from the competitors.
21. If multiple systems can fulfill the requirements, vendors can submit multiple bids.
22. The Bidder should belong to either Class-1 or Class-2 suppliers distinguished by their “local content” as defined by recent edits to GFR. They should mention clearly which class they belong to in the cover letter. a) Class-1 supplier: Goods and services should have local content of equal to or more than 50%. b) Class-2 supplier: Goods and services should have local content of equal to or more than 20 % and less than 50%.
23. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.
24. The quotations should be on FOR-IISc Bangalore basis in INR only.
25. Bidders offering imported products will fall under the category of non-local suppliers. They cannot claim themselves as Class-1 local suppliers/Class-2 local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training, and other sales service support like AMC/CMC, etc., as local value addition.
26. Purchase preference as defined by the recent edits to GFR (within the “margin of purchase preference”) will be given to the Class-1 supplier.
27. MSMEs can seek an exemption to some qualification criteria. IISc follows GFR2017 for such details.



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## **DC-powered Electrochemical with Multi-Channel Detection Unit**

The DC-powered Electrochemical Devices and Multi-Channel Detection Unit play a crucial role as testing instruments for analysing reactions occurring at electrode surfaces, measuring concentrations of various analytes, and characterizing electrochemical processes. It also includes an optional Frequency Response Analyzer (FRA) for studying Electrochemical Impedance Spectroscopy (EIS). It finds application in both in-situ and ex-situ sensing conditions. This DC-powered electrochemical workstation comes with a variety of features that are specifically crafted for accurate control and measurement in electrochemical experiments. It allows for adjustable control of both voltage and current in potential-static, galvanostatic, and potentiodynamic modes. This caters to a broad range of experimental needs with high voltage compliance and adaptable current ranges. The workstation supports different electrode setups, ensuring precision and reproducibility through automated potential control, real-time monitoring, and data logging. Its impedance spectroscopy capabilities make it easy to study electrical properties at various frequencies.

With a user-friendly interface for easy experiment setup, built-in safety features, and compatibility with temperature control, this workstation distinguishes itself for its versatility. Its modular design enables customization, and its compact, portable construction ensures adaptability in laboratory setups. Notably, its portability makes it a convenient option for real-time applications, allowing researchers to take the workstation to the field for instant electrochemical assessments. This enhances its usefulness in dynamic and practical research scenarios.

We are seeking a DC-powered Electrochemical system with Multi-Channel Detection Unit to test under various environmental conditions. The instruments should have the following specs.

### **Specifications for Supply of Bio-Sensor Detection Device**

1. Electrochemical Impedance Spectroscopy
  - 2,3,4 Electrodes System with Banana & Crocodile Connector
  - System can be connected with conventional Electrodes and screen-printed Electrodes
  - Applied Voltage:  $\pm 5$  Volts or More
  - Compliance voltage:  $\pm 10$  Volts or More
  - Current Range: pA to mA range
  - Potential Accuracy: 0.1%
  - Current Resolution: fA Range
  - Impedance Frequency Range: 10  $\mu$ Hz-1 MHz
  - Power Supply: USB Powered & Battery Operated
  - Auxiliary port
  - Software compatible with Windows /Mac and also interfaceable with Smartphone port

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2. Extension of the Potentiostat with Eight separate cells or sensors, each with a working, reference, and counter electrode & multiple working electrodes array, and should be future upgradable up to 128 electrodes.

### **Essential Accessories:**

Three Electrode System: Qty 2

One set of Ag/AgCl Reference Electrode, Pt Wire Counter Electrode, Glass Carbon Working Electrode along with Glass Cell with Teflon Cap and Stand

### **Supported Techniques:**

Cyclic Voltammetry, Linear Sweep Voltammetry, Differential Pulse Voltammetry Square Wave Voltammetry Normal Pulse Voltammetry, AC Voltammetry, Stripping Voltammetry, Chronoamperometry, Pulsed Amperometric Detection, Multiple Pulse Amperometry, Fast amperometry Chronopotentiometry, Open Circuit Potentiometry, Multistep Amperometry, Multistep Potentiometry, Mixed Mode, Corrosion Test, Tafel Plot, Impedance spectroscopy

- Should be capable for Impedance analysis Bode plot, Nyquist Plot & Circuit Fitting Software
- System should have inbuilt capability or addon module which can provide positive feedback to compensate for the Ohmic Drop between Reference Electrode & the outside of the double layer of the electrochemical cell.
- System should have inbuilt capability or addon module to control Bi Potentiostat, EQCM
- Compatible Electrochemical Customized Software should work in any number of PC and should have the following features:
- Complete Software package with lifetime licence, compatible with Windows10 based platform. Preferably with USB or Ethernet controlled system. Software should be capable of supporting a wide variety of Electrochemical techniques as mentioned above and also should have open source to develop our own device after optimising the Data with the supplied System.

Note:

The system should be complete in all respects. A supplier must provide a point-by-point compliance with documentary evidence, datasheets, and brochures.